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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,842	01/10/2005	Shik Chi Tsang	056646-5023	8744
9629 7590 10/18/2007 MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004			EXAMINER EBRAHIM, NABILA G	
			ART UNIT 1618	PAPER NUMBER
			MAIL DATE 10/18/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/500,842	Applicant(s) TSANG ET AL.	
	Examiner Nabila G. Ebrahim	Art Unit 1618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 16-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>8/18/05, 7/7/04.</u> | 6) <input type="checkbox"/> Other: ____ |

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DETAILED ACTION

Information Disclosure Statement

The receipt of Information Disclosure Statements dated 8/18/05, and 7/7/06 is acknowledged.

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-15, drawn to a method of making microparticles having a metal-containing core encapsulated in a graphitic shell comprising the steps of forming a colloidal particles in a liquid medium and separating the particles from the liquid medium and pyrolyzing them.

Group II, claim(s) 16-28, drawn to a method of making solid microparticles having a metal-containing core surrounded by a silica coating including the steps of forming colloidal particles in a liquid medium and form a silica coating around said colloidal particles by hydrolyzing a silicon compound in the region of the interface between the colloidal particle and the liquid medium and microparticles with graphitic shell.

2. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the steps of group 1 requires only pyrolyzing while group two requires hydrolyzing and microparticles coated with a silica shell.

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3. During a telephone conversation with Mr. Paul Kokulis on 11/14/2006 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-15. Affirmation of this election must be made by applicant in replying to this Office action. Claims 16-28 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonard et al. Physics and chemistry of carbon nanostructures, European Chemistry Chronicle 3, 9-16 (1998), hereinafter "Bonard" in view of Klein Dean A. WO 0200192, the reference is provided by Applicant (Klein).

Bonard discloses different approaches for synthesis of carbon nanotubes and structures. Among the methods disclosed by Bonard was using a liquid-phase oxidation to produce graphitic microparticles having graphitic shells (page 4) and the shell may encapsulate particles or cones Pd, Fe, and Co (page 6). Carbon-coated metallic nanoparticles may also be formed by arc-discharge: in particular, ferromagnetic, and rare earth carbide nanocrystallites have been successfully encapsulated (page 6). The nanoparticle suspension was stabilized by a surfactant (page 4) and the suspension form which the particles are separated is colloidal (page 4). Instant claim 1 recites separation of the particles from the liquid; however, the claim does not recite the technique of separation, which turn this step to logical process that is expected in any method disclosed in Bonard. Instant claim 5 requires a polar solvent, while Bonard teaches that methanol has actually proven successful to separate the nanotubes from the nanoparticles. The reference teaches separating the microparticles from the nanotubes (page 4). Instant claim 1 also recites pyrolyzing particles in inert gas, Bonard discloses raising the temperature. Bonard discloses that nanotubes can be also produced, although in microscopic quantities, under isotropic conditions by heating carbon soot at 2000°C to 2500°C, this heating process reads on the pyrolyzing requirement of claim 1. Bonard teaches, it seems that nanotubes develop a higher

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stiffness due to their cylindrical shape (curved), see page 2 and page 4, this reads on the requirement of instant claim 14. For oxidation required by claim 8, Bonard teaches methods in liquid-phase oxydation have been proposed, which use potassium permanganate (page 4).

Bonard is deficient in teaching the inclusion of radioactive material in the microparticle.

Klein teaches methods of embolization using an embolizing agent composition that includes particles with carbon surfaces, and comprising a contrast agent. Preferred particles include a radiopaque particle substrate and a pyrolytic carbon surface (abstract). Klein also disclosed that the particle substrates are included with the hydrocarbons and alloying gases in a fluidized or floating bed at a temperature sufficient to cause deposition of pyrolyzed carbon onto the substrate surface, e. g., from about 1200 to 1500 F and that inert gas flow is used to float the bed of particle substrates, optionally including an inert mixing media. The hydrocarbon pyrolysis results in a high carbon, low hydrogen content carbon material being deposited as a solid material on particle substrates (page 12, lines 20+).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add a radionuclide to the particles produced by the method disclosed by Bonard to expand their methods of use. The skilled artisan would have reasonable expectations of success because graphitic shells have included radionuclides previously successfully as disclosed by Klein.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nabila G. Ebrahim whose telephone number is 571-272-8151. The examiner can normally be reached on 8:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Hartley can be reached on 571-272-0616. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nabila Ebrahim
10/12/07


MICHAEL G. HARTLEY
SUPERVISORY PATENT EXAMINER